



Fire Fighting and Fire Protection with Superabsorbent Gel Technology



Home owners are continually moving into rural settings



Homeowner fights an uphill battle attempting to provide exposure protection

What is Thermo-Gel® 200L?



is a

fire extinguishing additive for Class A fires

which converts

water into a *gel*



1/5/05

Fire Chemicals
For use by USDA Forest Service
(Qualified or Approved and commercially available)

Chemical	Mix Ratio	Qualified/Approved Applications ¹					
		Fixed-Wing Airtanker	Fixed-Wing Water Scooper	SEATS	Fixed-Tank Helicopter	Helicopter Bucket	Ground Engine
FIRE SUPPRESSANT WATER ENHANCERS (Approved under Administrative Work Plan – qualification of these product types will be covered by Forest Service Specification 5100-306a as soon as it is implemented). Please review the Notes for Selection and Use (www.fs.fed.us/rm/fire/retardants/current/gen/documents/waterenh.htm)							
Phos-Chek AquaGel-K ²	0.4-1.2%					*	*
Thermo-Gel 200L ³	2%					*	*
Flame Guard Gel	0.6 lb/gal						*
Wildfire AFG Firewall ⁴	3.0%						*

¹ * Fully Qualified * Administrative Approval

² This product was evaluated and approved under the name Chemikal Aqua Shield.

³ This product was evaluated and approved under the name Stockhausen Cinder FP-47.

⁴ This product was evaluated and approved under the name NoChar B112.

Composition

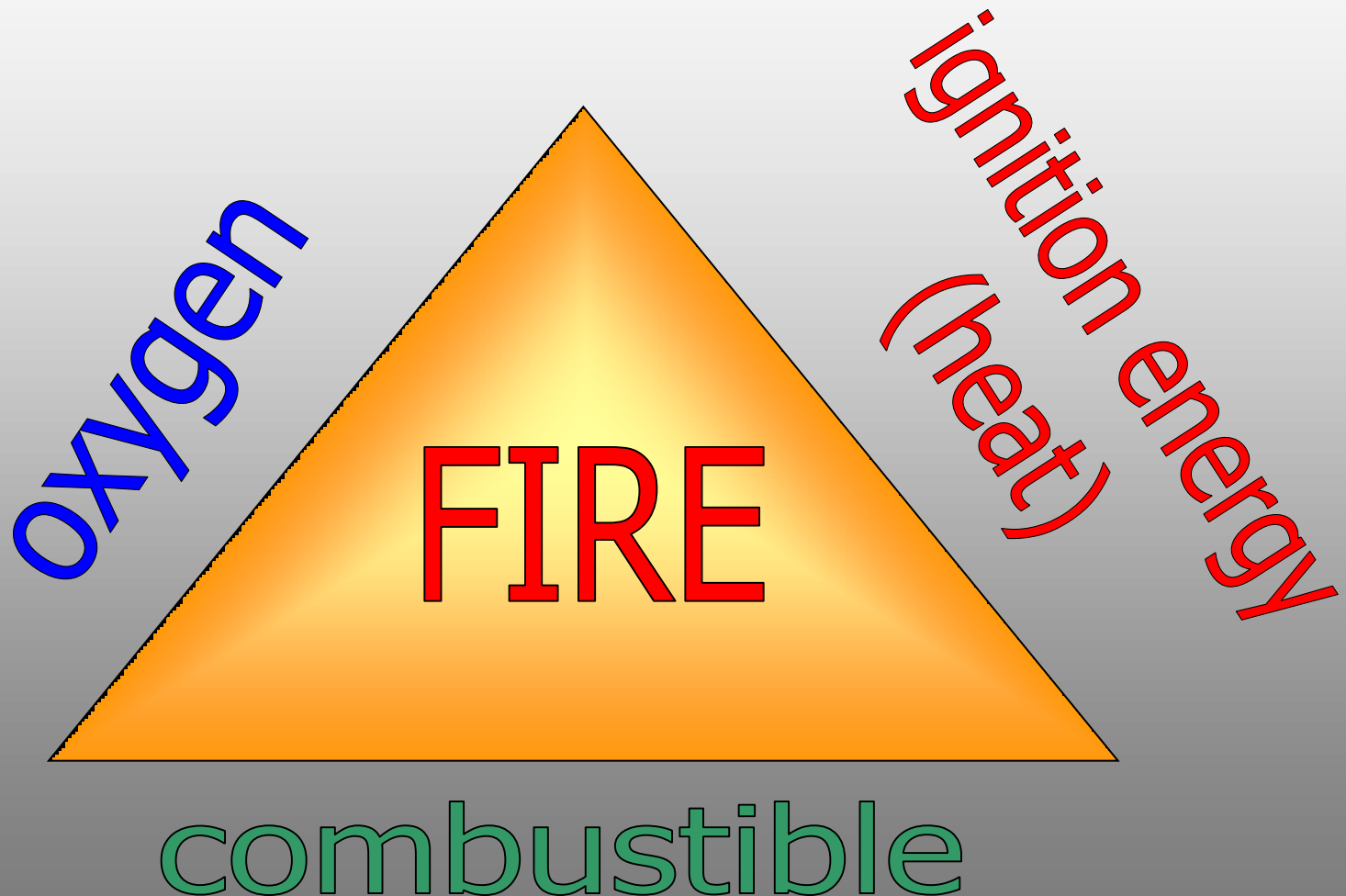
The Thermo-Gel[®] 200L concentrate consists of:

28	%	polymer
43	%	water
23	%	mineral oil
6	%	surfactants

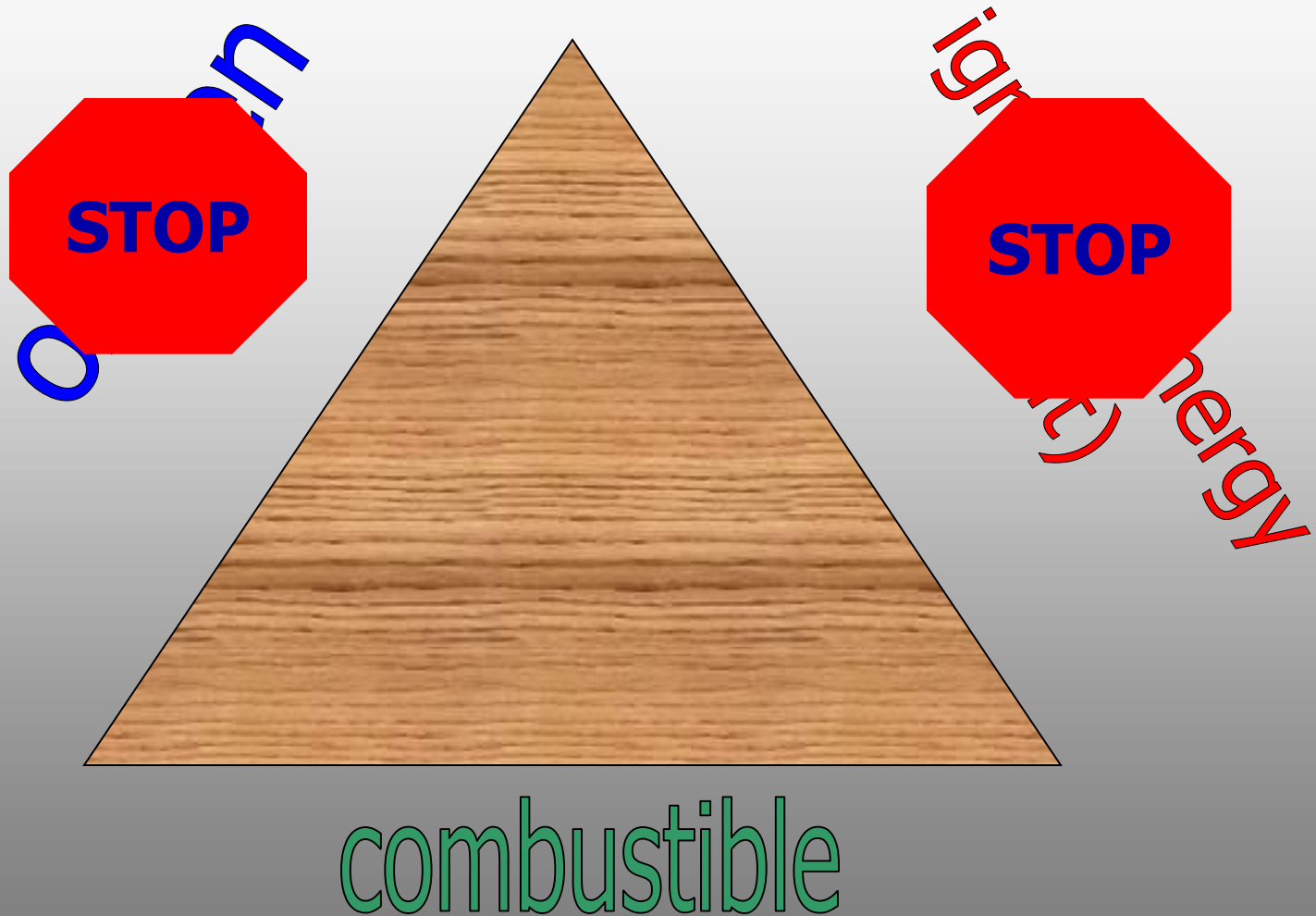
Thus, 100 lbs **Gel** (at 1.5 % Thermo-Gel[®] 200L) contain:

0.42	lbs	polymer
0.34	lbs	mineral oil
0.09	lbs	surfactants
99.15	lbs	water

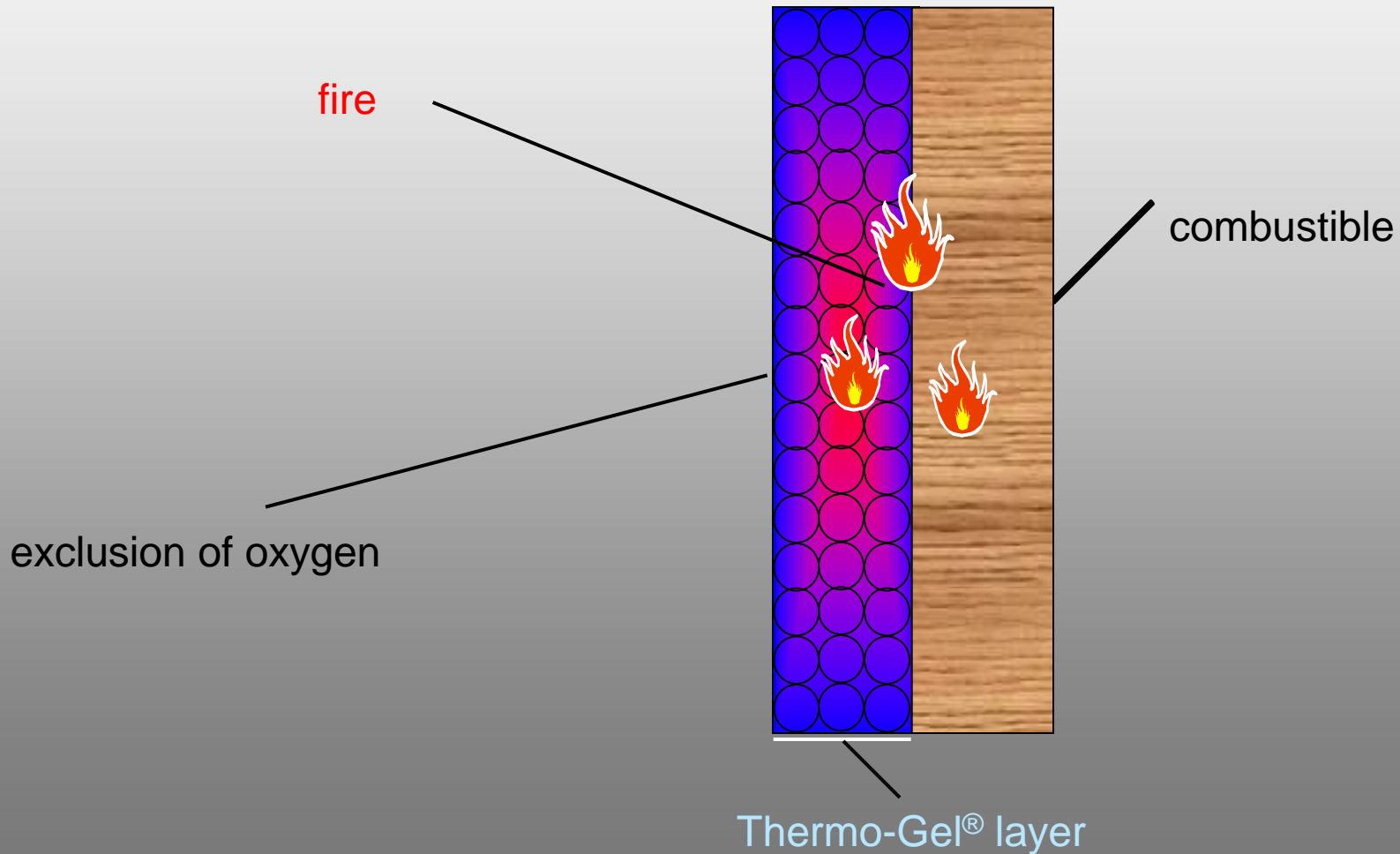
Three pre-requisites of fire



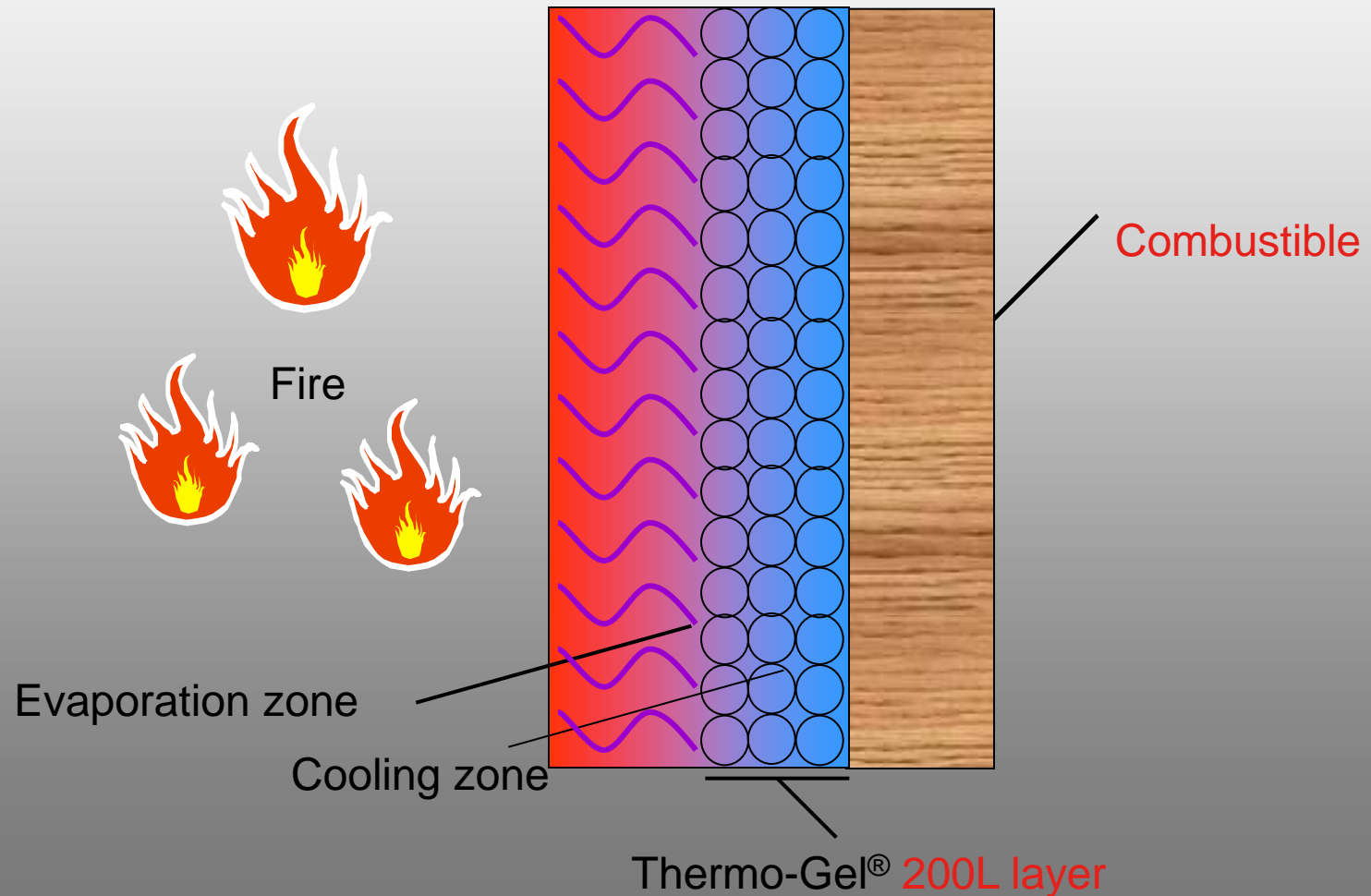
The role of *Therma-Gel*® 200L



Cooling + Suffocation with *Therma-Gel®* 200L



Cooling / Protection



Clings to overhanging surfaces





Adheres to glass and metal surfaces



Covers flammable roof surfaces

Structure protection with *Thermo-Gel*® 200L

A comparative trial of
Thermo-Gel® 200L vs. Class A Foam



Application of Thermo-Gel® 200L

Structure protection with *Therma-Gel*® 200L (Test)





Protection with
Class A foam at 1%



Protection with
Therma-Gel® 200L
at 2 %

Fire taking impact on structure

(Fuel 2.5 gal Chevron Training Fuel III, time on fire 10 min.)

	Side A (Foam)	Side B (Therma-Gel® 200L)	
After 2 min	Shows signs of pre-heating	Full protection	
Within 3 min	Eaves ignite and begin burning	Full protection	
4 min	Glass window pane cracks	Window pane stayed intact over duration of test	
3 to 7 min	Water needs to be applied repeatedly to prevent house from burning too rapidly	No action needed No signs of charring	
After 10 min	Fire inside the wall	No hot spots No signs of impingement	
End of test	Structure lost	Structure saved and fully intact	

Fire Trial at DMT

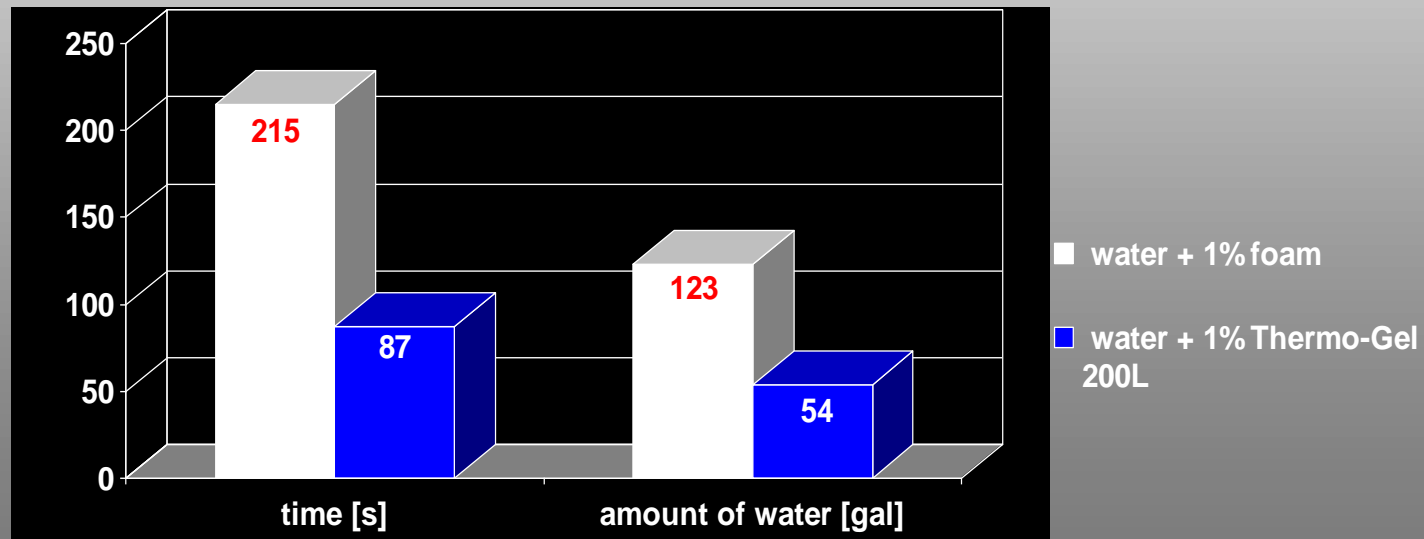
Test material: 660 lbs (300 kg) car
tires

Burning time: 8 minutes

Extinguishing additives:

Foam as wetting agent: 1.0 %

Thermo-Gel® 200L: 1.0 %





Cleans up with water

Therma-Gel® Clean-Up



A p p l i c a t i o n s



Forest fire

Creation of fire breaks without removal of vegetation



Tire fire

Most effective prevention of rekindling

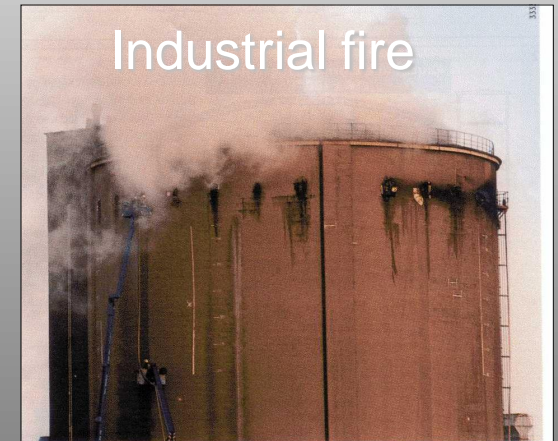


Object protection



Structure protection

Two gallons of Thermo-Gel® 200L can save a home



Industrial fire

35,000,000 lbs sugar beets in silo extinguished with Thermo-Gel® 200L

Fire Suppression

- Gel adheres to the burning material
- Increases the water's effectiveness
- Reduces extinguishment time
- Cools the material
- Excludes oxygen
- Suffocates the fire
- Prevents rekindle

Industrial Fires



- Grain Silos
- Sawdust Bins or Piles
- Log Landings
- Warehouse
- Container Storage
- Palletized Products

Structure Fires



Wildland Fires



Tire Fires



Prescribed Burning



Protection

- Clings to glass, metal, siding, vegetation
- Provides thermal barrier
- Prevents radiant heat ignition
- Blocks direct flame impingement
- Easily removed when threat passes

Structures and Vehicles



Fuel and Propane Tanks

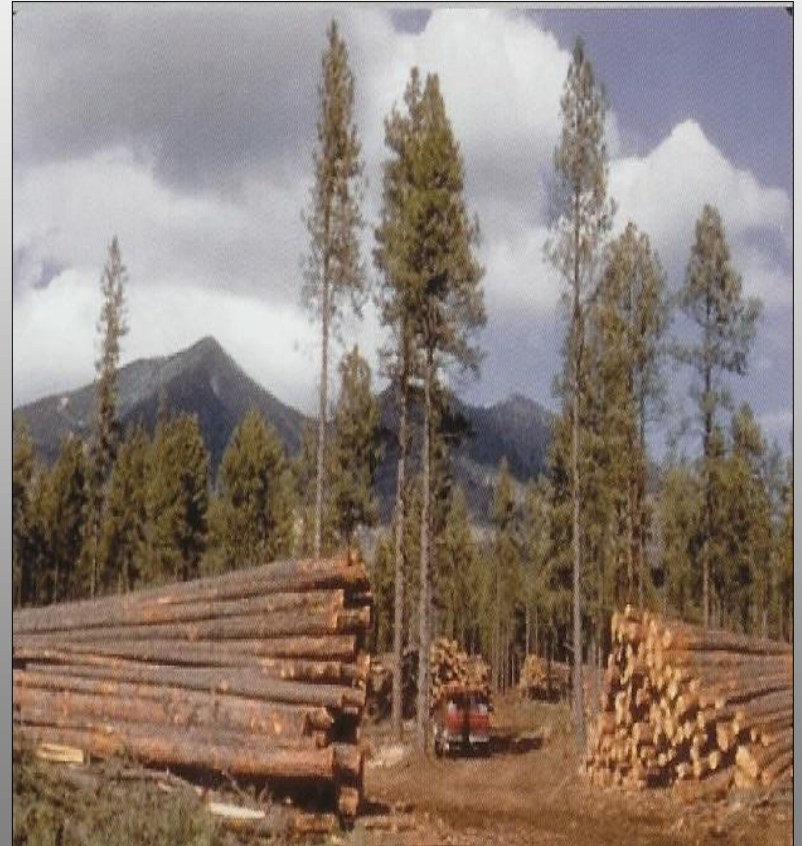


Exposures

Vegetation



Log Deck



Application Systems

1-Gallon Garden Hose Eductor Nozzle



5-Gallon Fire Hose Eductor Nozzle



5-Gallon



1-Gallon



Advisements - Thermo-Gel®

- **Non-Aggressive: Thermo-Gel® can be applied to**
 - Paint
 - Wood
 - Glass
 - Stone
 - Stucco
 - Concrete
 - Rubber
 - Vegetation
- **Environmentally Safe and Bio-degradable**
 - Breaks down by ultra-violet sunlight
 - Can be washed off with water and into drainage systems
 - Thermo-Gel® is Non-Toxic

Homeowner Information

➤ Clean-up – After threat passes

- Rinse surfaces thoroughly with water from top down
- Windows can be cleaned with window cleaner
- It is Not necessary to rinse from vegetation
- Thoroughly rinse gel from sidewalks, driveways or walkways – gel is very slippery
- Milky-white color is normal and will NOT harm the environment

➤ SAFETY

- Thermo-Gel® is slippery and extreme caution must be taken while walking, standing, or working in treated areas. Wear non-slip footwear while applying or rinsing gel from surfaces. Never attempt to climb or stand on a treated roof. Falls and serious injury can result.



Thermo-Gel[®]

The Solution for Fire Professionals.

923 E. Interstate Avenue
Bismarck, North Dakota 58503
(701)258-8208 Fax (701)258-7259
www.thermo-gel.com

24 hour Emergency/EERA/BPA
866-255-8137

U.S. Patents 5,989,446; 6,245,252 Addl Patents Pending

U.S. Forest Service Approved!
Meets NFPA 1150 Standard!